

What is claimed is:

1 *Sub A27* 1. A contactless IC card comprising:

2 a demodulator circuit which receives a carrier wave that has  
3 been ASK-modulated with digital data, and demodulates the ASK-  
4 modulated carrier wave to recover the digital data; and

5 suspending means which suspends the demodulation by the  
6 demodulator circuit during periods where there is no possibility  
7 of a change of a data value in the digital data.

2. The contactless IC card of Claim 1,

wherein the demodulator circuit includes:

a detector circuit which detects an envelope of the ASK-  
modulated carrier wave;

a reference voltage generator circuit which outputs a  
reference voltage;

a differential circuit which receives the envelope from the  
detector circuit, and outputs differential components of the  
received envelope based on the reference voltage; and

a comparator circuit which includes a first input terminal  
for receiving the output of the differential circuit, a second  
input terminal for receiving the output of the reference voltage  
generator circuit, and an output terminal, compares a voltage at  
the first input terminal and a voltage at the second input  
terminal, and inverts an output of the output terminal if a

16 difference between the two voltages exceeds a predetermined  
17 value.

1 3. The contactless IC card of Claim 2,

2 wherein the suspending means includes:

3 a short-circuit control circuit which short-circuits the  
4 first input terminal and the second input terminal during the  
5 periods where there is no possibility of a change of a data value  
6 in the digital data; and

7 a short-circuit control signal output circuit which outputs  
8 a short-circuit control signal to the short-circuit control  
9 circuit, to indicate the periods during which there is no  
10 possibility of a change of a data value in the digital data.

11 4. The contactless IC card of Claim 3,

12 wherein the short-circuit control circuit is a transistor  
13 whose source and drain are connected to different terminals out  
14 of the first and second input terminals of the comparator  
15 circuit, and whose gate receives the short-circuit control  
16 signal.

17 5. The contactless IC card of Claim 4,

18 wherein the short-circuit control signal output circuit  
19 includes:

4 a clock generator circuit which generates a clock signal;  
5 a counter which counts the number of edges of the clock  
6 signal; and

7 controlling means which exercises control so that the short-  
8 circuit control signal is asserted when the count in the counter  
9 reaches a predetermined number.

1 6. The contactless IC card of Claim 5, further comprising  
2 a memory which stores the recovered digital data under the  
3 control by the controlling means,

4 wherein the controlling means accesses the memory during  
5 periods where the short-circuit control signal stays asserted.

6 7. The contactless IC card of Claim 2,  
7 wherein the differential circuit is a CR time constant  
8 circuit, and

9 wherein the suspending means includes:  
10 a time constant increase circuit which sustains a time  
11 constant of the CR time constant circuit at a higher level during  
the periods where there is no possibility of a change of a data  
value in the digital data; and

a time constant control signal output circuit which outputs  
a time constant control signal to the time constant increase  
circuit, to indicate the periods during which there is no

12 possibility of a change of a data value in the digital data.

1 8. The contactless IC card of Claim 7,

2 wherein the time constant increase circuit includes:

3 a first capacitor which is connected in parallel with a  
4 second capacitor included in the CR time constant circuit; and

5 a switching element which is connected in series with the  
6 first capacitor, and receives the time constant control signal  
7 from the time-constant control signal output circuit.

1 9. The contactless IC card of Claim 8,

2 wherein the switching element is a transistor whose source  
3 or drain is connected with the first capacitor, and whose gate  
4 receives the time constant control signal.

1 10. The contactless IC card of Claim 7,

2 wherein the time constant control signal output circuit  
3 includes:

4 a clock generator circuit which generates a clock signal;

5 a counter which counts the number of edges of the clock  
6 signal; and

7 controlling means which exercises control so that the time  
8 constant control signal is asserted when the count in the counter  
9 reaches a predetermined number.

1 11. The contactless IC card of Claim 10, further  
2 comprising

3 a memory which stores the recovered digital data under the  
4 control by the controlling means,

5 wherein the controlling means accesses the memory during  
6 periods where the time constant control signal stays asserted.

1 12. The contactless IC card of Claim 2,

2 wherein the comparator circuit has a hysteresis between upper  
3 and lower threshold values with respect to the reference voltage,  
4 the upper threshold value being a sum of the predetermined value  
5 and the reference voltage, and the lower threshold value being a  
6 difference of the predetermined value from the reference  
7 voltage,

8 wherein the suspending means includes

9 a hysteresis control signal output circuit which outputs a  
10 hysteresis control signal to the comparator circuit, to indicate  
11 the periods during which there is no possibility of a change of  
12 a data value in the digital data, and

13 wherein the comparator circuit includes

14 a hysteresis control circuit which sustains the predetermined  
15 value at a higher level to thereby sustain the width of the  
16 hysteresis at a greater level, during the periods where there is

17 no possibility of a change of a data value in the digital data.

1 13. The contactless IC card of Claim 12,

2 wherein the hysteresis control signal output circuit  
3 includes:

4 a clock generator circuit which generates a clock signal;

5 a counter which counts the number of edges of the clock  
6 signal; and

7 controlling means which exercises control so that the  
8 hysteresis control signal is asserted when the count in the  
9 counter reaches a predetermined number.

10 14. The contactless IC card of Claim 13, further  
11 comprising

12 a memory which stores the recovered digital data under the  
13 control by the controlling means,

14 wherein the controlling means accesses the memory during  
15 periods where the hysteresis control signal stays asserted.

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